
DEQ
VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Public Webinar

Draft 2022 Water Quality Assessment Integrated Report

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Virginia Department of Environmental Quality
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Purpose of today's webinar

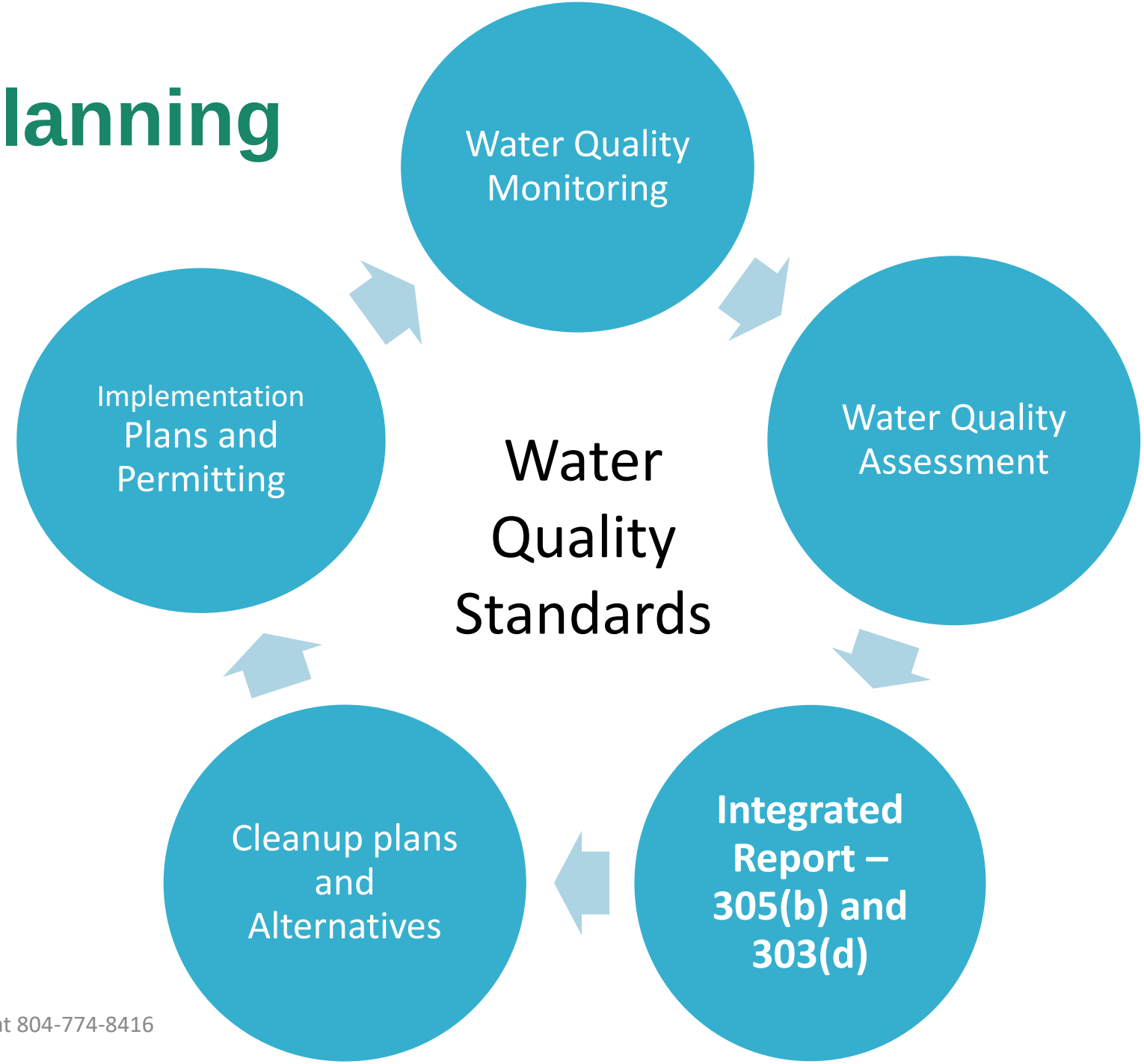
- Provide general information and highlights from the draft 2022 Integrated Report (IR), including status of restored and impaired waters
- Increase public awareness of water quality in the Commonwealth
- Announce opportunity for public review and comment through **August 5**

Background – 2022 IR

- Required to assess and report on the quality of state waters every even-numbered year
- Six Year Assessment Period: Jan. 2015 – Dec. 2020

- Assessments are conducted in reference to Virginia Water Quality Standards
- Report the results of statewide water quality monitoring
- Identify and prioritize waters needing cleanup plans

Continuing Planning Process



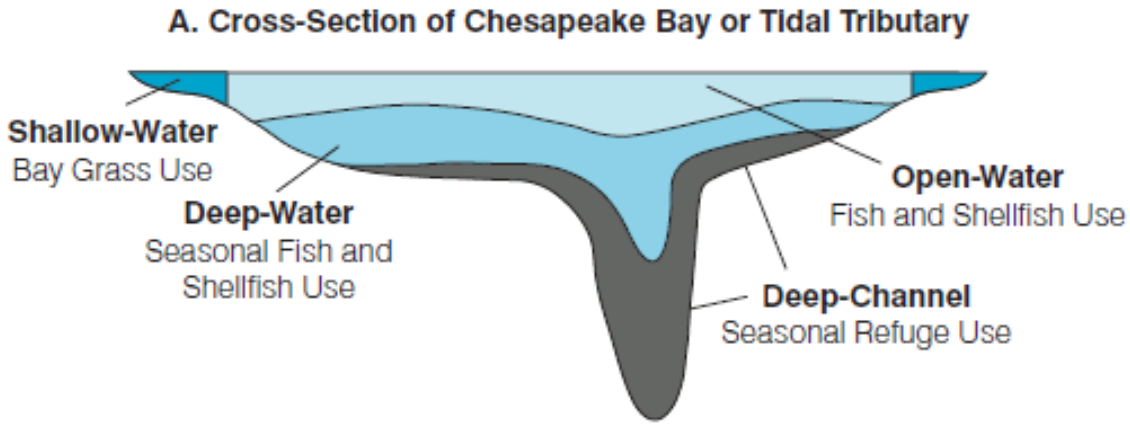
Water Quality Standards - Designated Uses

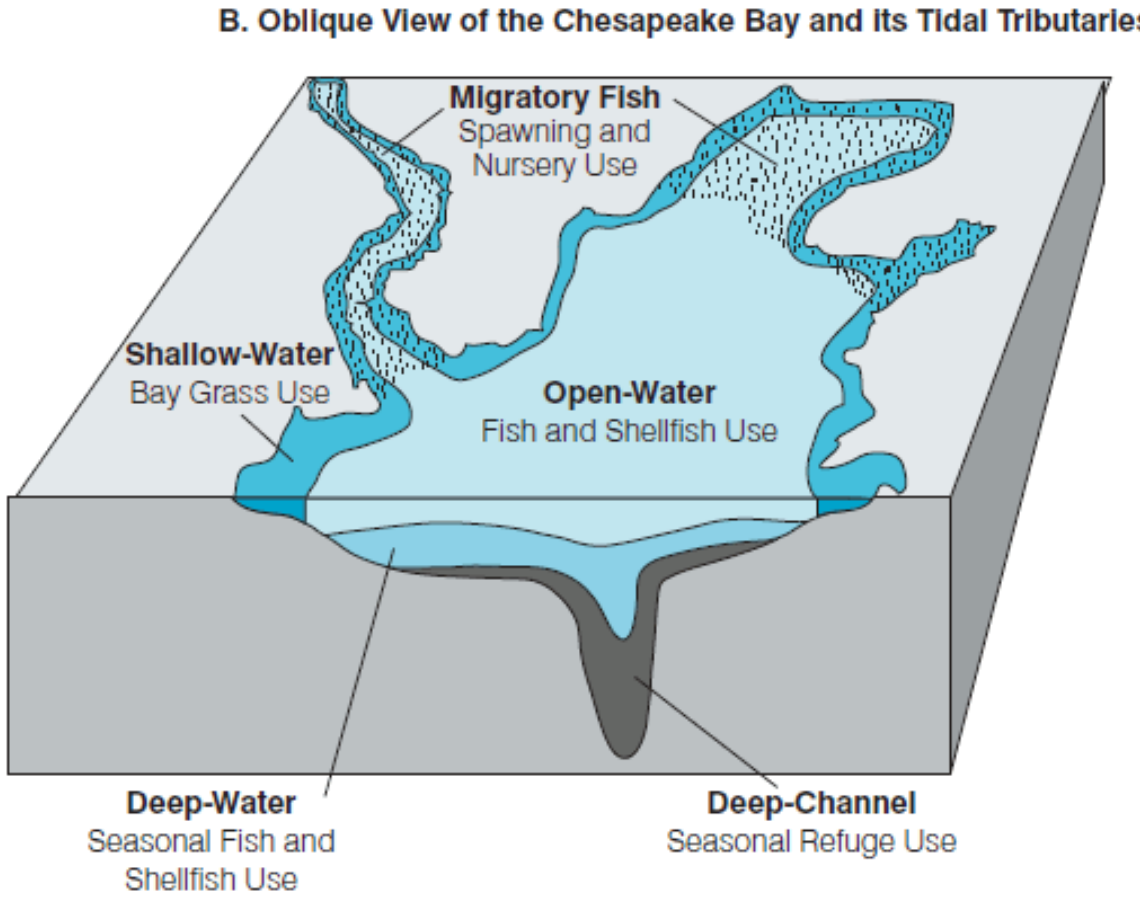
DESIGNATED USE	USE DESCRIPTION AND INDICATORS
Recreation (Swimming) Use	Description: Swimming, boating, and other recreational activities
	Indicators: Bacteria levels, VDH notices
Aquatic Life Use, Chesapeake Bay sub-uses	Description: The propagation, growth, and protection of a balanced native population of aquatic life that may be expected to inhabit a waterbody
	Indicators: Dissolved oxygen, pH, temperature, water column and sediment toxics, toxicity tests, benthics, submerged aquatic vegetation, chlorophyll a and total phosphorus (lakes only), *et al*
Fish Consumption Use	Description: Game and marketable fish species that are safe for human health
	Indicators: VDH notices, fish tissue toxics, water column toxics

Water Quality Standards - Designated Uses

DESIGNATED USE	USE DESCRIPTION AND INDICATORS
Wildlife Use	Description: The protection of wildlife
	Indicators: Water column toxics
Public Water Supply Use	Description: At the drinking water intake and generally within a 5-mile protection area, criteria protect human health
	Indicators: Water column toxics, VDH notices
Shellfishing Use	Description: Marketable shellfish (clams, oysters, mussels) that are safe for human health
	Indicator: VDH notices

Chesapeake Bay & Tidal Tributaries Refined Designated Uses



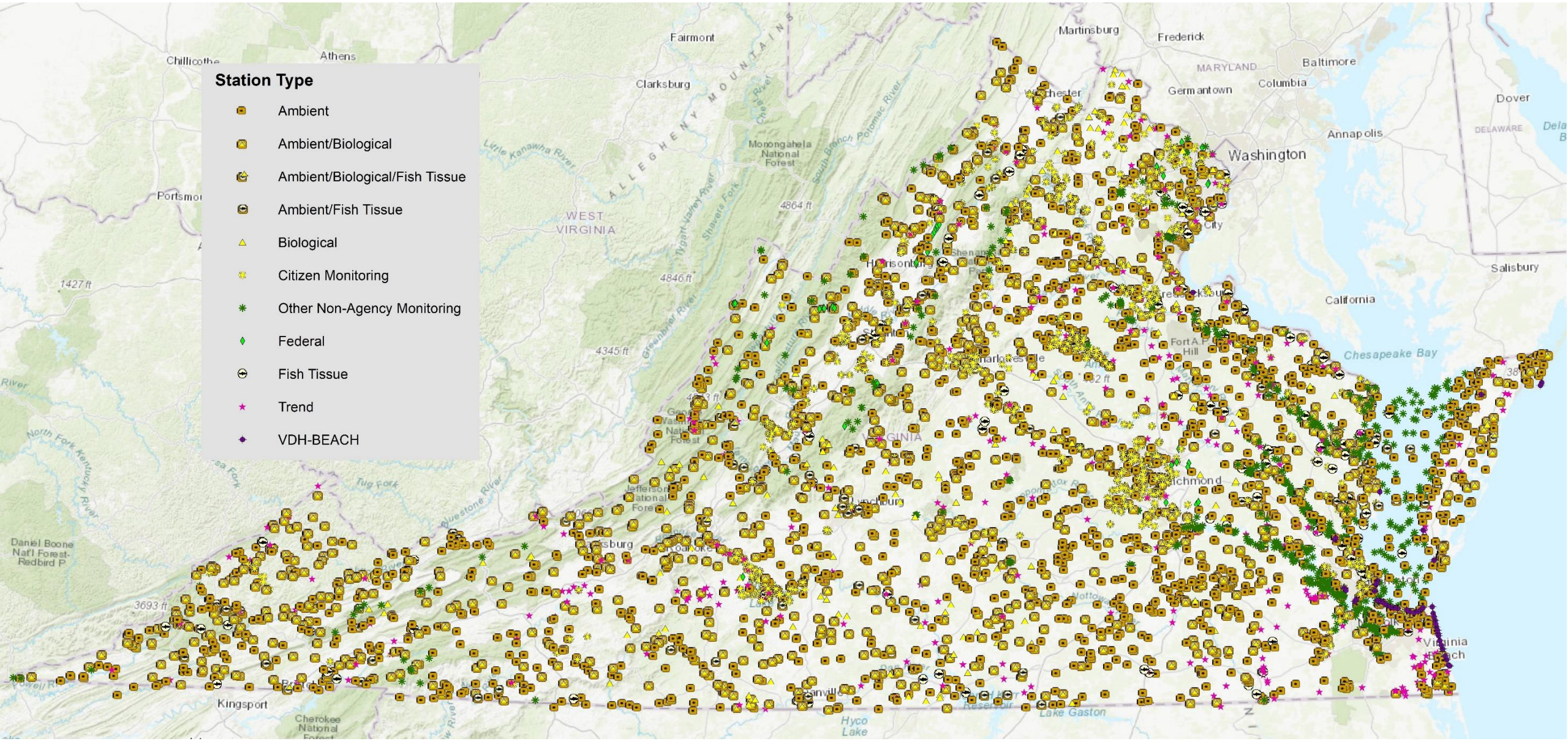


Water Quality Monitoring – 2022 IR

- Water quality data was evaluated for multiple parameters collected by DEQ at approximately 3400 stations

- Data from nearly 500 non-agency stations and over 1,650 citizen monitoring stations were submitted for use in the assessment

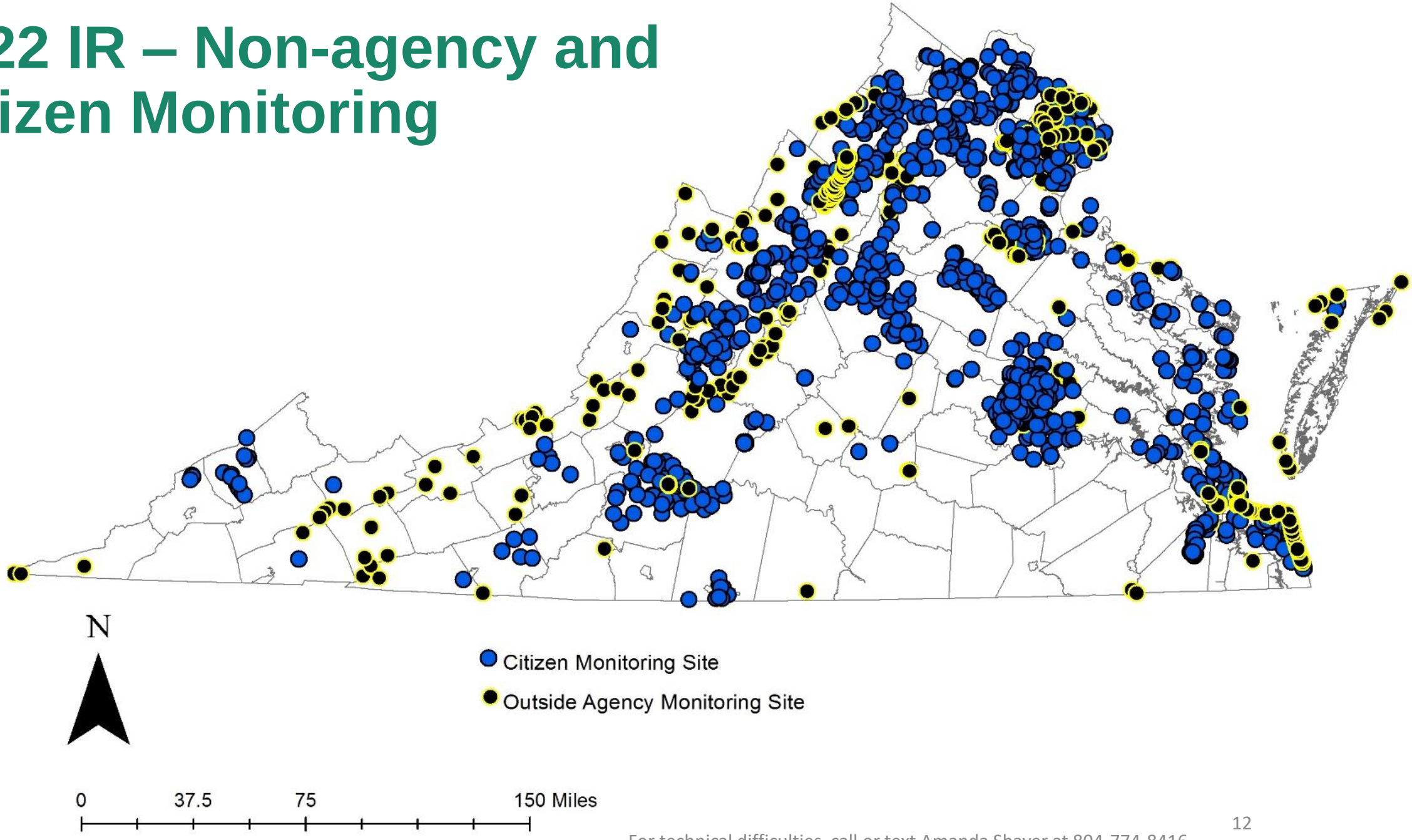
2022 IR – Monitoring Stations



2022 IR – Monitoring Stations

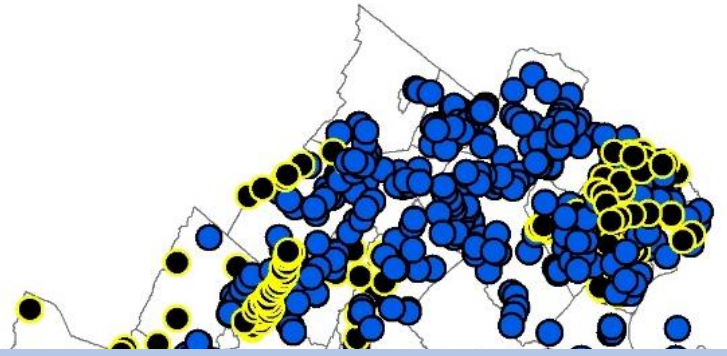
- **3,420** DEQ water quality monitoring stations sampled
  - Over 100,000 field measurements for temperature, pH, & DO
  - 52,626 samples analyzed for bacteria
  - 80,688 samples analyzed for nutrients
- **270** DEQ fish tissue stations visited
  - 1,152 samples analyzed for PCBs
  - 1,495 samples analyzed for metals, including Mercury
- **1,121** DEQ biological stations visited
  - 3,137 benthic macroinvertebrate sampling events (each with 200 bugs identified to genus)

2022 IR – Non-agency and Citizen Monitoring



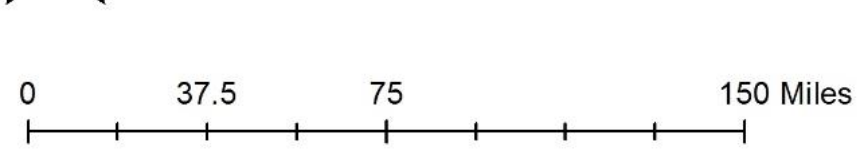
For technical difficulties, call or text Amanda Shaver at 804-774-8416

2022 IR – Non-agency and Citizen Monitoring



https://www.deq.virginia.gov/water/water-quality/monitoring/citizen-monitoring

- Citizen Monitoring Grant Opportunity: Request for Applications (RFA) has been released. Applications due August 31.
- Citizen Nominations for DEQ monitoring: accepted from January - April each year



Water Quality Assessment

- Analyze water quality data and compare the results to Water Quality Standards and other appropriate thresholds and criteria

  https://www.deq.virginia.gov/water/water-quality/water-quality-standards

- Follow the assessment procedures and methods outlined in Virginia's Water Quality Assessment Guidance Manual

  https://www.deq.virginia.gov/water/water-quality/assessments/wqa-guidance-manual

- Categorize waters based on assessment results
  - **Fully supporting or non-impaired:** waters that meet water quality standards
  - **Impaired:** waters that do not meet water quality standards
  - **Insufficient Information:** waters without sufficient data to make an assessment determination

2022 IR - Assessment Overview

	Rivers (mi)	Lakes (acres)	Estuaries (sq mi)
Non-Impaired (% total)	3,615 (4%)	12,303 (10%)	312 (11%)
Impaired (% total)	16,184 (16%)	101,172 (86%)	2,138 (75%)
Not Assessed (% total)	81,184 (80%) [1]	4,308 (4%)	393 (14%)
TOTAL	100,983	117,783	2,843

[1] Not assessed: approximately 65% of Virginia's rivers are headwater systems, and are not monitored by DEQ's ambient water quality network. These waters are routinely monitored via the Probabilistic Monitoring program and are included in watershed cleanup plans.

Assessment Results - comparison

	Rivers (mi)		Lakes (acres)		Estuaries (sq. mi)	
Assessment Cycle	**2020 IR**	**2022 IR**	**2020 IR**	**2022 IR**	**2020 IR**	**2022 IR**
% Non-Impaired	6%	4%	16%	10%	11%	11%
% Impaired	16%	16%	80%	86%	75%	75%

2022 IR - Delist summary

- **426** new delists this cycle
  - 17 new “full” delists
  - 409 new “partial” delists

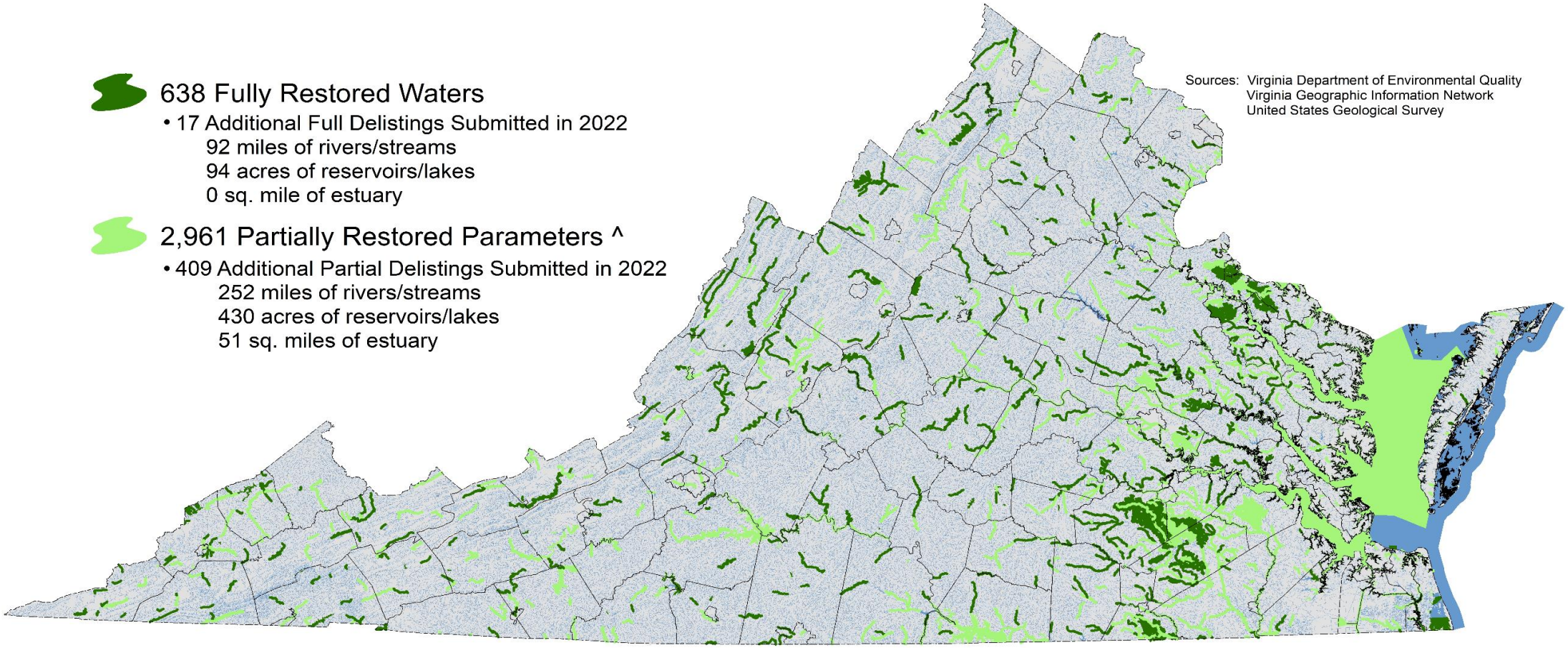
Jackson River

- Listed for DO in 1996
- 2022 IR will delist 11 miles
- Successful public and private sector partnership
  - lessen the effects of the artificial hydrology from the upstream dam and mimic a more natural flow regime

Water Quality Restoration Progress* in Virginia

638 Fully Restored Waters
- 17 Additional Full Delistings Submitted in 2022
  - 92 miles of rivers/streams
  - 94 acres of reservoirs/lakes
  - 0 sq. mile of estuary

2,961 Partially Restored Parameters ^
- 409 Additional Partial Delistings Submitted in 2022
  - 252 miles of rivers/streams
  - 430 acres of reservoirs/lakes
  - 51 sq. miles of estuary



Sources: Virginia Department of Environmental Quality
Virginia Geographic Information Network
United States Geological Survey

DEQ
Virginia Department of Environmental Quality

N W E S

0 12.5 25 50 75 100 Miles

* Restoration progress (i.e. Delist status) is cumulative through December 2020.

^ Partial delisting totals are parameter based. Partially delisted parameters from prior cycles have been removed from the tally as those waters become fully delisted.

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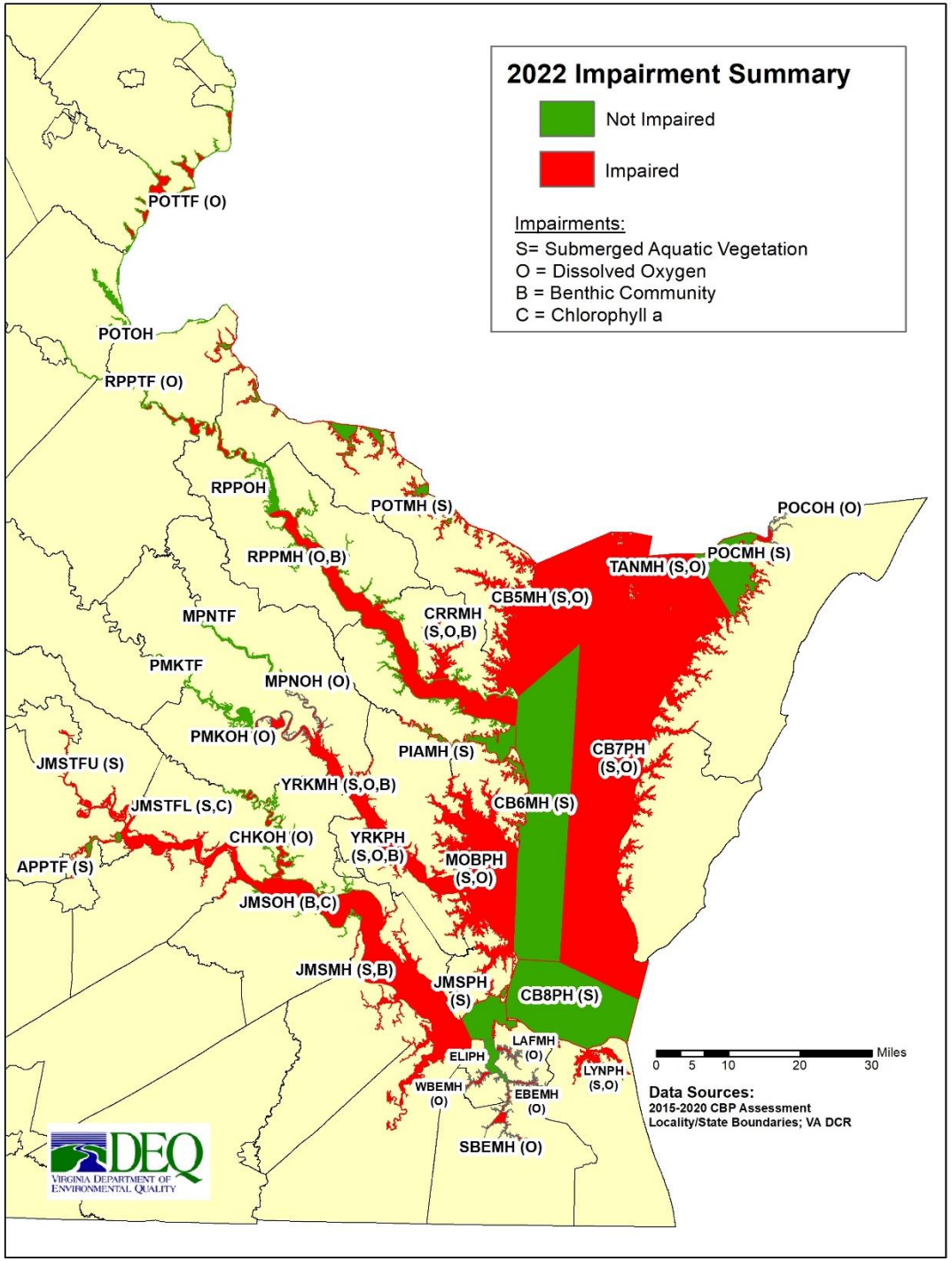
2022 IR – Bay Restoration

- Elizabeth River and its tributaries: continued improvement in DO levels during non-summer months
- All James River segments met the open water DO criteria
  - Other segments meeting this criteria: CB5MH, CB6PH, CB8PH and Pocomoke Sound (POCMH)

- Estuarine benthic assessment: full attainment in the mainstem Bay as well as the far upper portions in each estuary
- The 2022 IR shows a consistent improvement with respect to segment-specific Submerged Aquatic Vegetation (SAV) acreage goals, with approximately **61%** of the overall sum achieved.

Photo courtesy of the Chesapeake Bay Foundation



Combined Ches. Bay Use Assessment Summary

- **Open Water 30-day Mean DO Criterion**: the highest DO exceedance rates occurred in the Southern and Eastern branches of the Elizabeth River—summertime exceedance rates of 38.01% and 45.24%, respectively.

- **Chlorophyll-a criteria**: currently only applicable in Tidal James River. All segments met the spring criteria. All segments, except for the Lower Tidal Fresh and Oligohaline segments (JMSTFL and JMSOH) met the summer criteria.

- **Deep Water sub-use**: met in mainstem segment CB6MH. Exceedance rates in other segments ranged from 0.003% in the Chesapeake Bay Mainstem (CB7PH) to 6.7% in the Rappahannock River (RPP).

- **Deep Channel sub-use:** not attained in segments CB5MH and RPPMH for the 2022 assessment cycle.

- There is a sufficient continuous monitoring dataset to assess the **Migratory Fish Spawning & Nursery Use** (MFSN) in the Pamunkey River for 2022. Assessment results show PMKTF and PMKOH meet the MFSN 7-day mean 10% exceedance rate, but have more than two consecutive days where the MFSN or OW instantaneous minimum criteria are exceeded.

Rivers – overall assessment summary

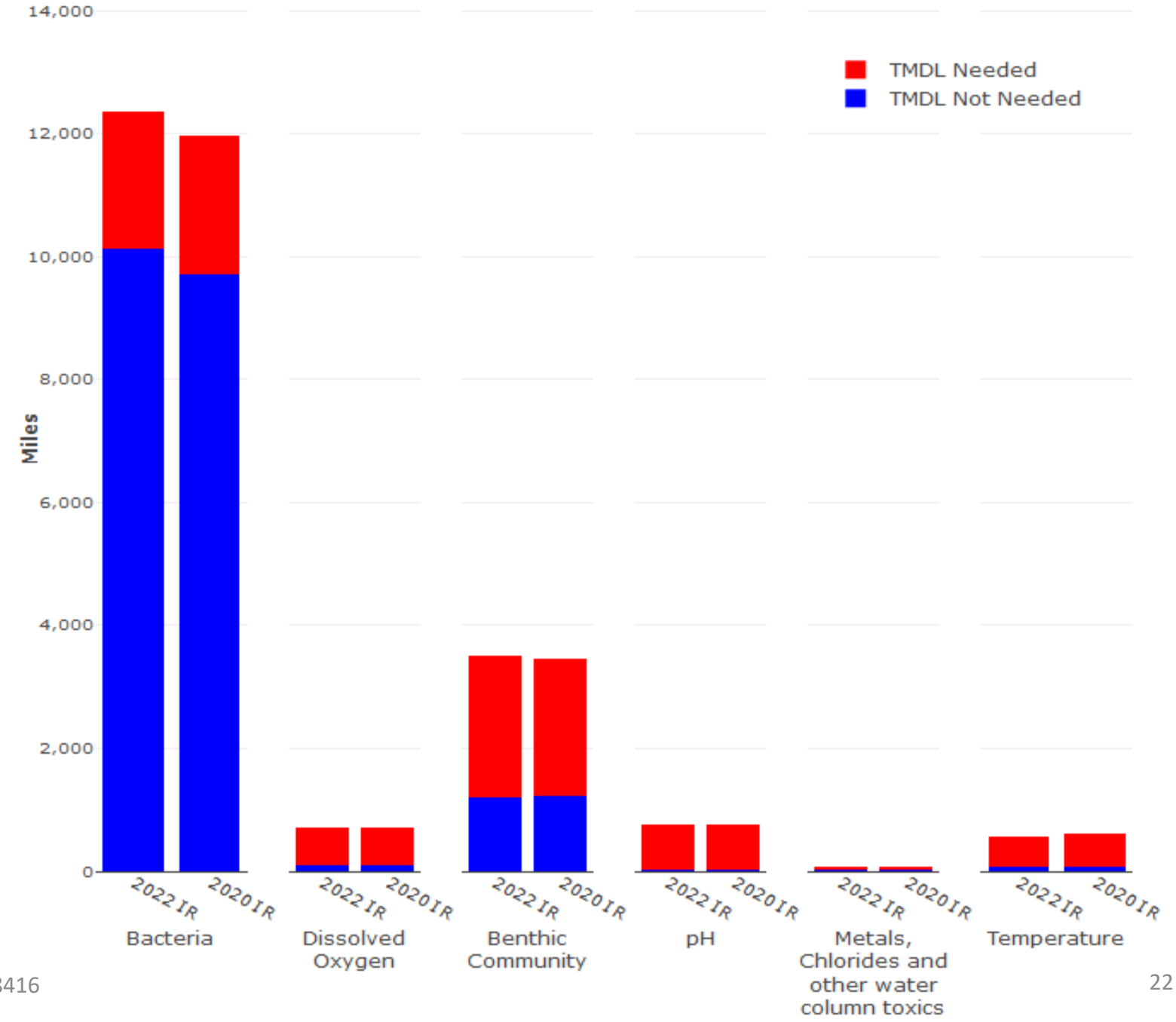
	Rivers (mi)
Non-Impaired (% total)	3,615 (4%)
Impaired (% total)	16,184 (16%)
Not Assessed (% total)	81,184 (80%)
TOTAL	100,983

- No major changes to riverine assessments this cycle
  - Bacteria remains a major cause of impairment in water column and mercury and polychlorinated biphenyls (PCBs) remain a major causes of impairments in fish tissue
- Not assessed: approximately 65% of Virginia's rivers are headwater systems, and are not monitored by DEQ's ambient water quality network
  - These waters are routinely monitored via the Probabilistic Monitoring program and are included in watershed cleanup plans.

Rivers

summary of water column impairments

- Bacteria remains a common impairment in Virginia's rivers
- Many rivers are covered by watershed plans to address bacteria (shown in blue).



Estuaries – overall assessment summary

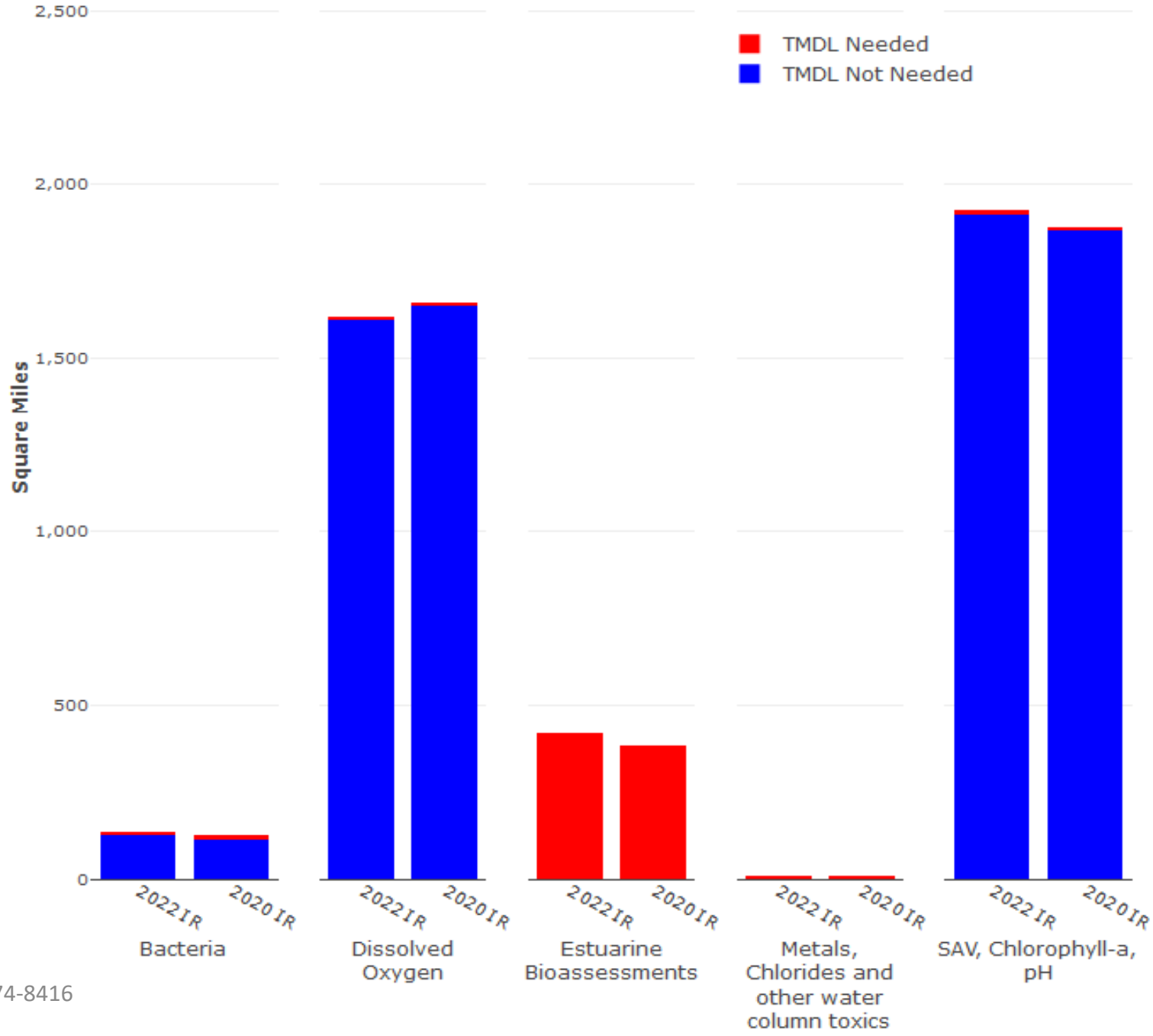
	Estuaries (sq mi)
Non-Impaired (% total)	312 (11%)
Impaired (% total)	2,138 (75%)
Not Assessed (% total)	393 (14%)
TOTAL	2,843

- The estuarine assessment includes the Chesapeake Bay
- No major changes to estuarine assessments this cycle
  - Slight increase in waters designated as “insufficient information” for recreation use assessment as a result of the implementation of the revised bacteria criteria
  - Low dissolved oxygen, insufficient submerged aquatic vegetation, and mercury and PCBs in fish tissue remain the major causes of impairment

Estuaries

summary of water column impairments in Virginia's estuarine waters—including the Chesapeake Bay

- Low dissolved oxygen and insufficient SAV are major causes of impairment to the aquatic life designated use.
- The Chesapeake Bay TMDL addresses many of these impairments in Virginia (shown in blue).



Lakes/Reservoirs – overall assessment summary

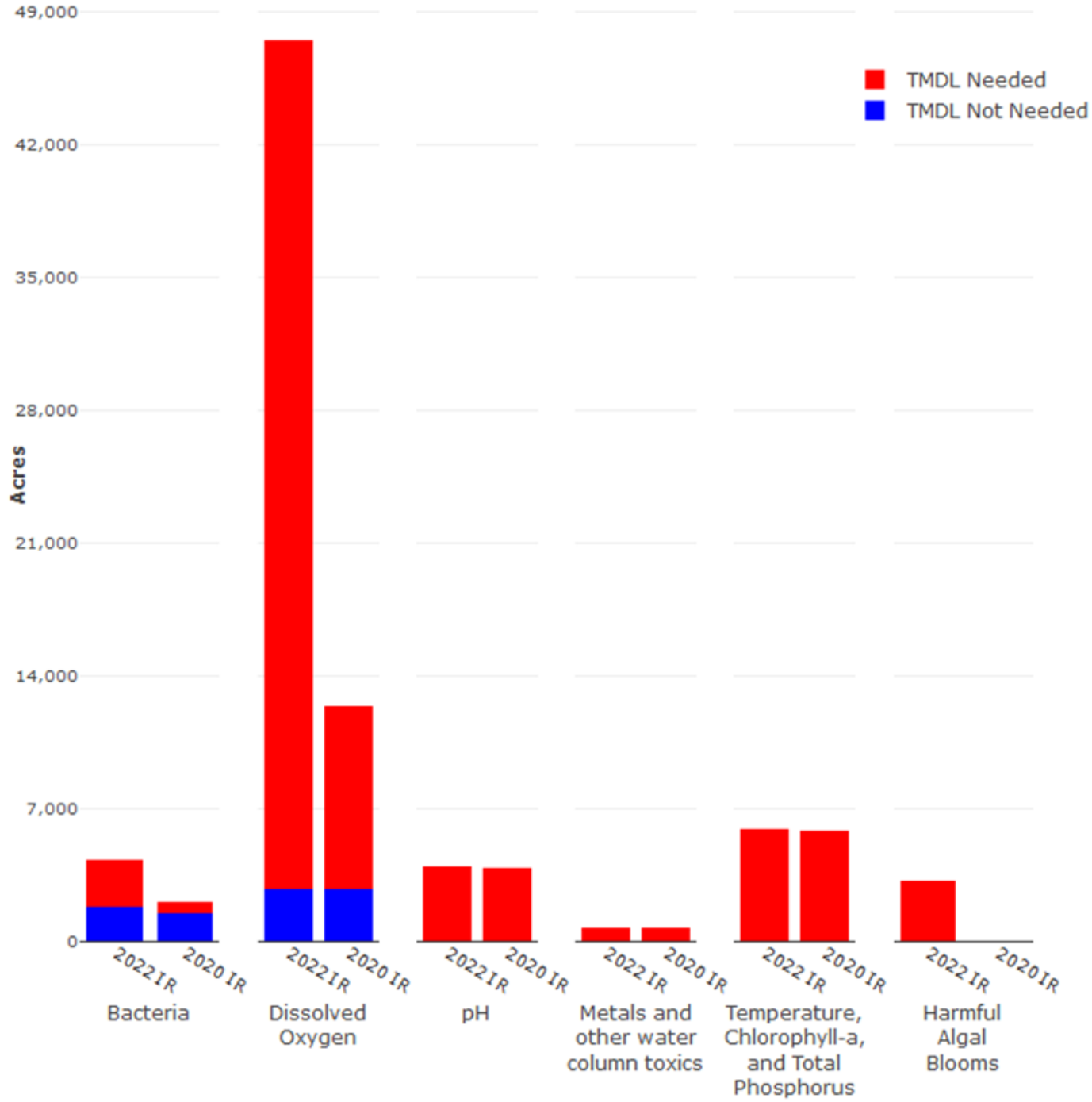
	Lakes (acres)
Non-Impaired (% total)	12,303 (10%)
Impaired (% total)	101,172 (86%)
Not Assessed (% total)	4,308 (4%)
TOTAL	117,783

- Notable changes in the 2022 IR
  - Several lakes listed as impaired due to low dissolved oxygen, including Kerr Reservoir, Lake Chesdin, and Leesville Lake
  - Nearly 3,200 acres of lakes have been listed as impaired due to VDH advisories for Harmful Algal Blooms, including 3,140 acres in Lake Anna
  - A notable increase in waters designated as “not assessed” for recreation use assessment as a result of the implementation of the revised bacteria criteria
- Mercury and PCBs in fish tissue remain a major causes of impairment

Lakes/Reservoirs

summary of water column impairments

- 60% of lake acres assessed for DO showed impairment this cycle. 40% were considered fully supporting for DO.
- The increase in dissolved oxygen impairments is due to several previously impaired or borderline-impaired lakes crossing the impairment threshold this cycle.

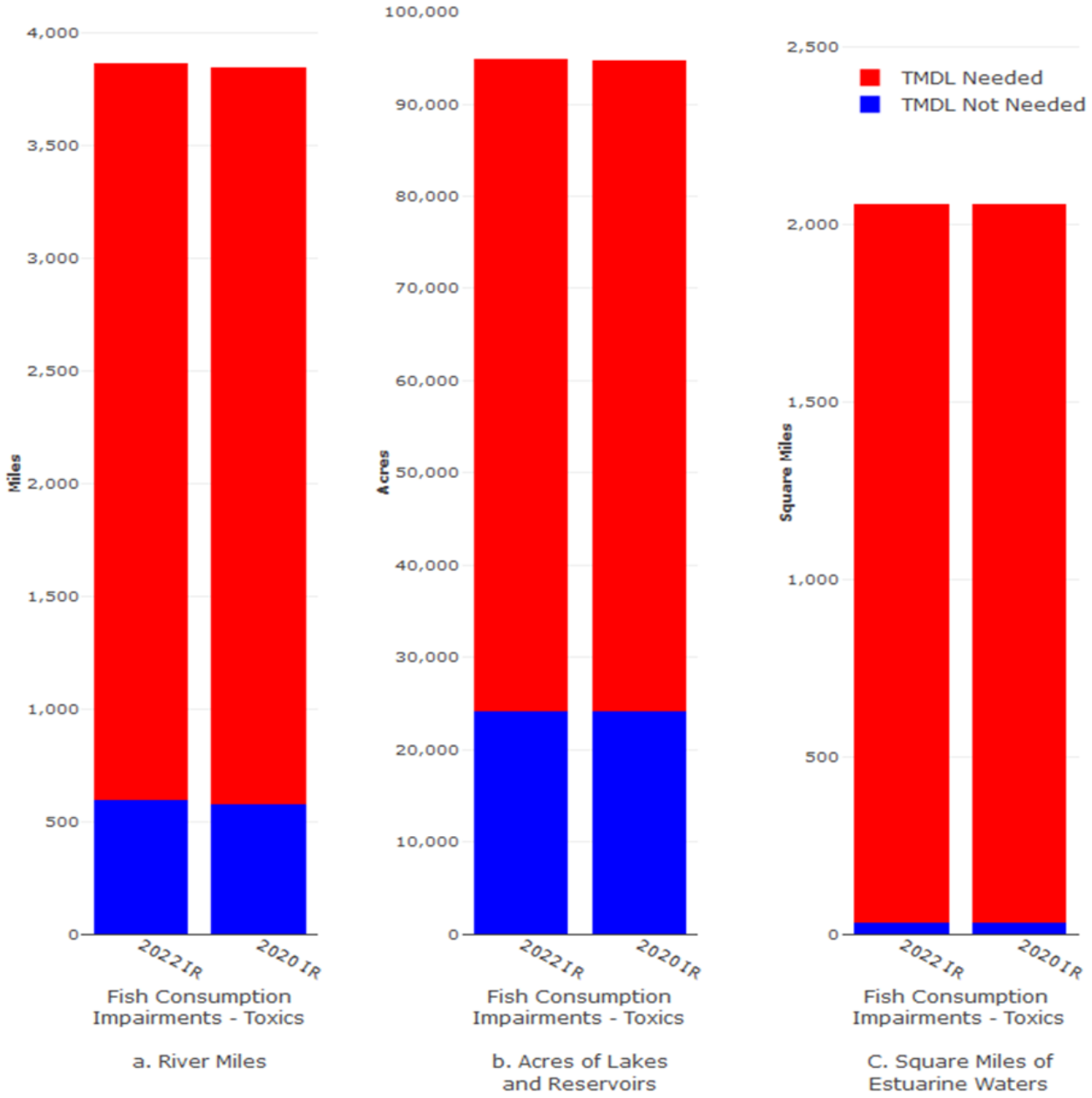


Fish Consumption Impairments – statewide summary

- DEQ collects fish tissue data from ~50 sites each year. Samples are analyzed for PCBs and metals (including Mercury).
- No major changes to the fish consumption assessment this cycle
  - Mercury and PCBs in fish tissue remain major causes of impairment in Virginia's waters
- Of the waters assessed for the fish consumption use, 18% of river miles, 77% of lake acres, and 85% of estuarine square miles show impairment
- Watershed plans (*i.e.*, TMDLs) have been developed for several waters.

Summary of waters with fish consumption impairments

- Mercury and PCBs in fish tissue remain a common impairment in Virginia's waters
- DEQ has developed several watershed plans to address the impairments (shown in blue).

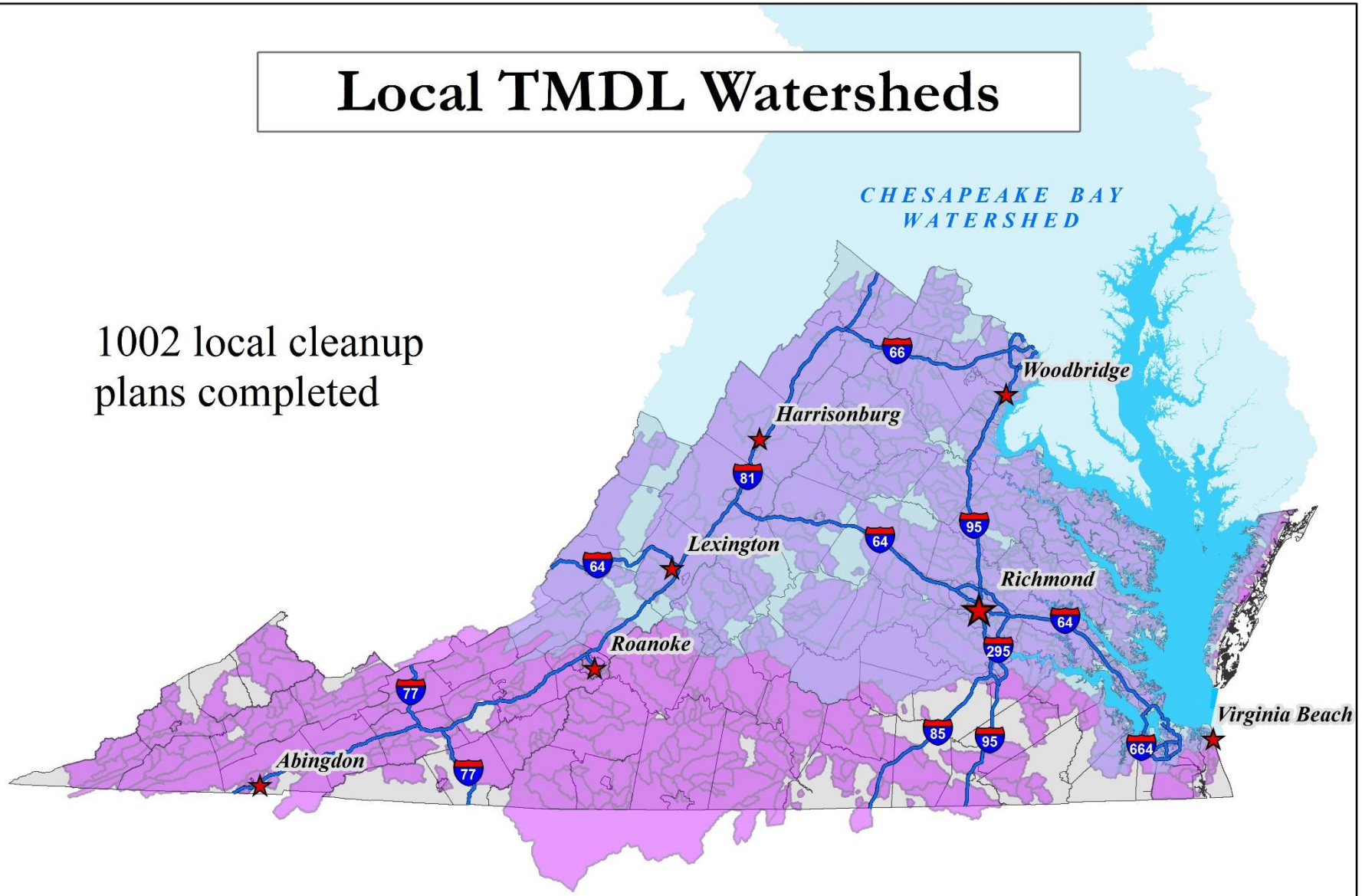


Total Maximum Daily Loads

- When waters are assessed as impaired, **Total Maximum Daily Loads** (TMDLs) and **Implementation Plans** are developed by DEQ
- TMDLs determine the total amount of a pollutant that a waterbody can receive without exceeding water quality standards
- Implementation Plans identify the management practices that will result in water quality improvements
- Remove Waters from 303(d) List when Water Quality Standards achieved
- https://www.deq.virginia.gov/water/water-quality/tmdl-development

Local TMDL Watersheds

1002 local cleanup plans completed



Data Sources: VA DCR, VA DEQ May, 2022.

Map Updated through May 2022.

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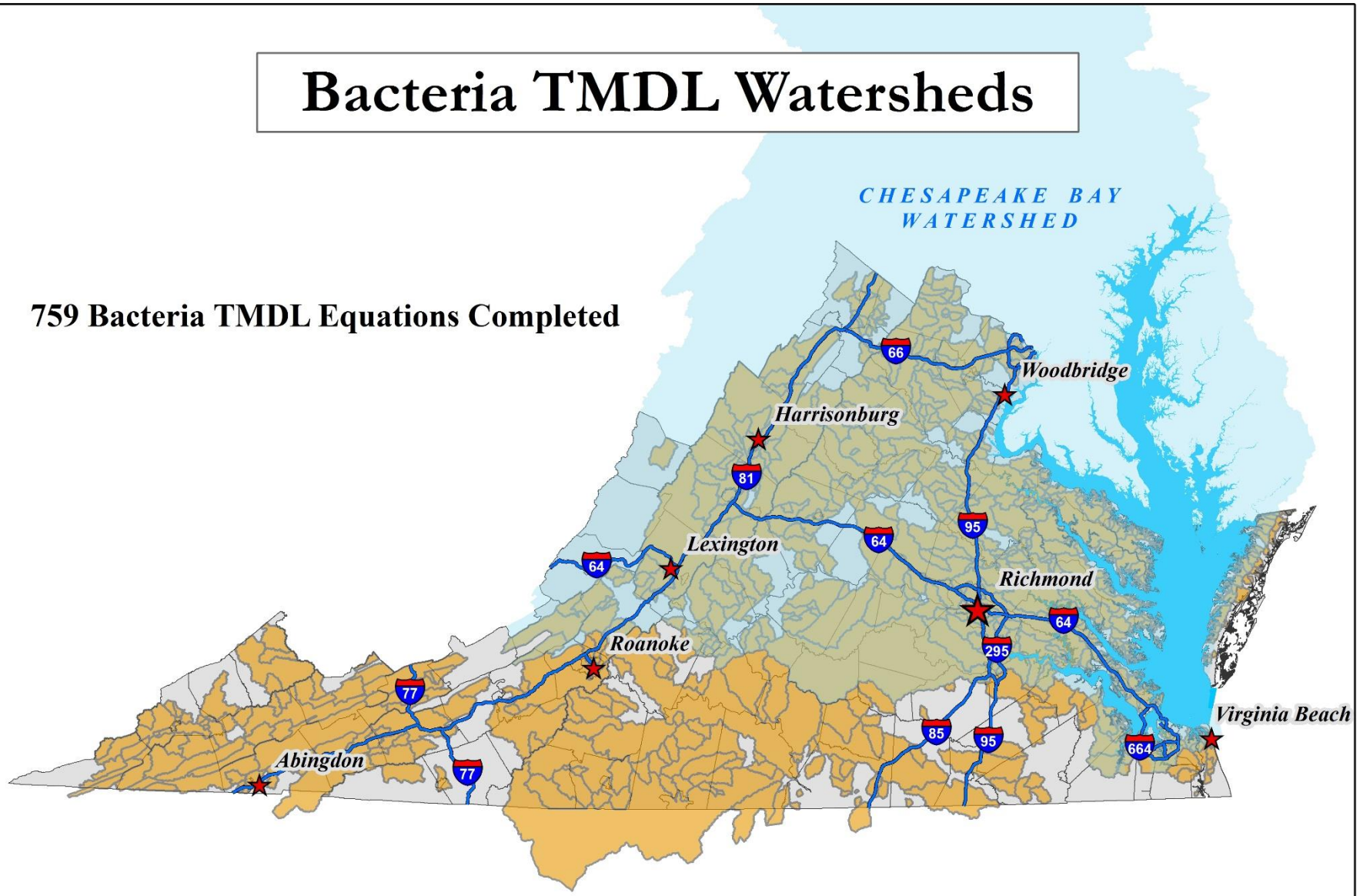
Bacteria TMDL Watersheds



Data Sources: VA DCR, VA DEQ May, 2022.

Map Updated through May 2022.

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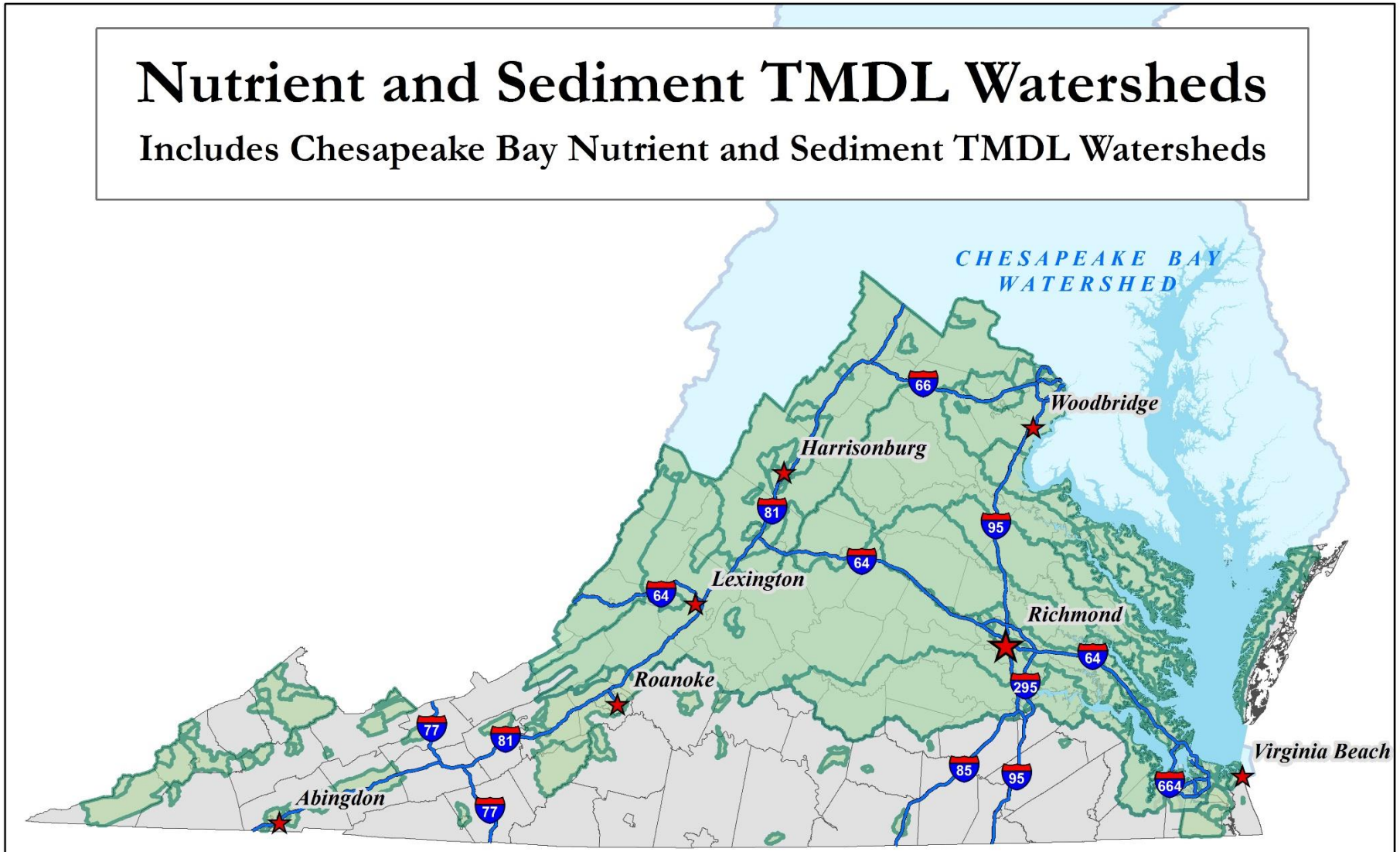
Nutrient and Sediment TMDL Watersheds

Includes Chesapeake Bay Nutrient and Sediment TMDL Watersheds



Data Sources: VA DCR, VA DEQ May, 2022.

Map Updated through May, 2022.

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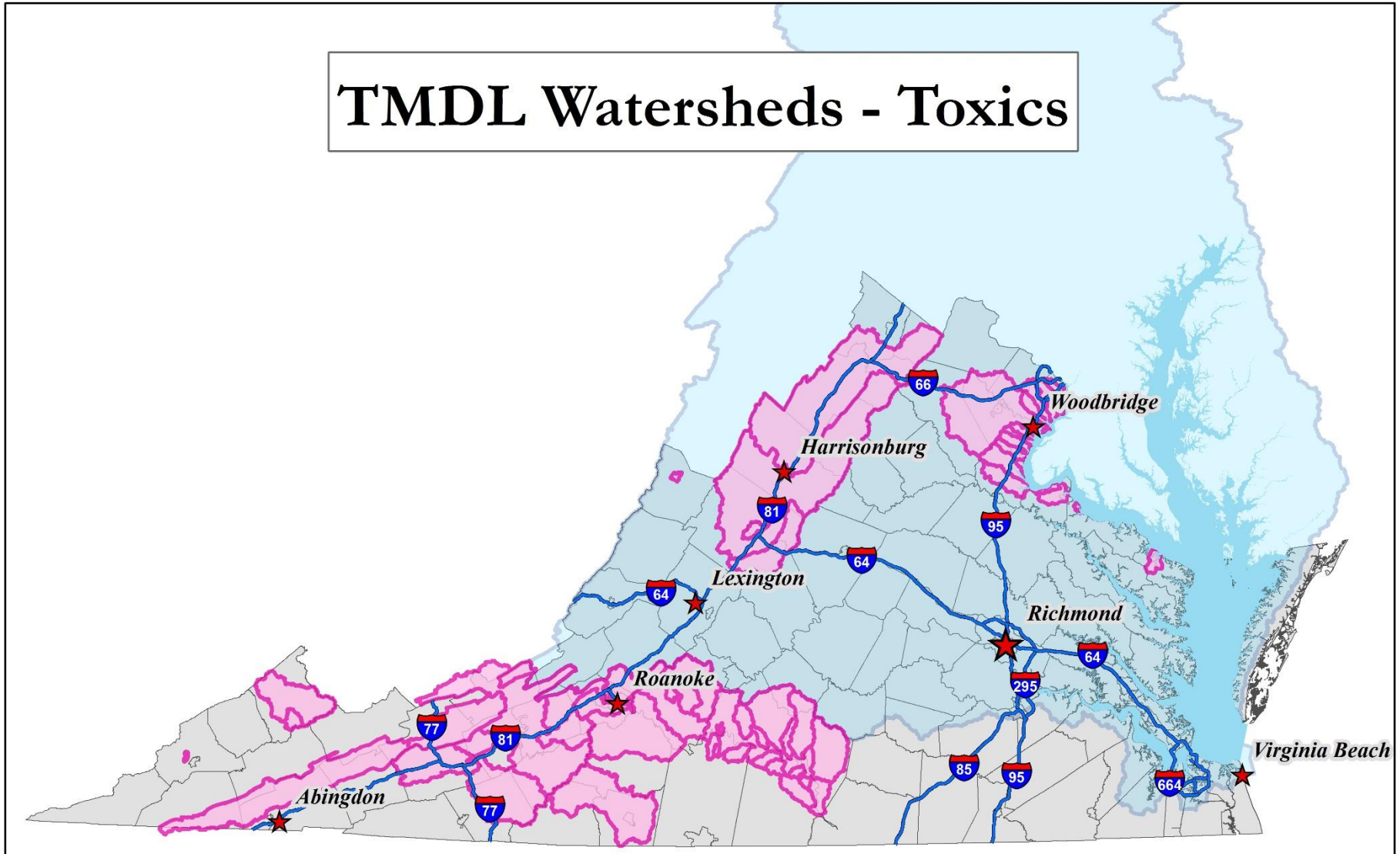
TMDL Watersheds - Toxics



Data Sources: VA DCR, VA DEQ May, 2022.

Map Updated through May, 2022.

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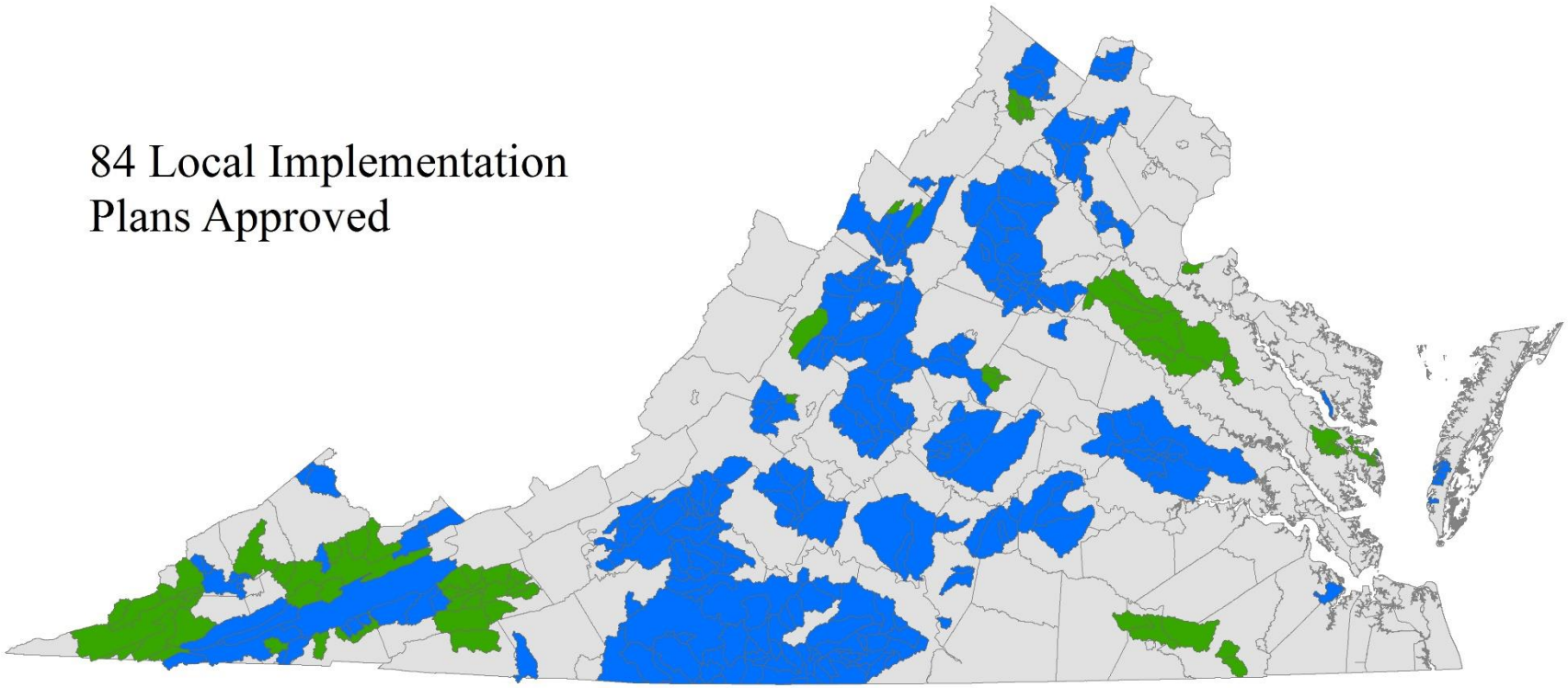
TMDL Implementation Watersheds

84 Local Implementation Plans Approved



Implementation Projects

Implementation Plans

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Data Sources: VA DCR, VA DEQ 2022.

Map Updated May, 2022.

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Visualizing the 2022 IR data

- DEQ's Environmental Data Mapper: https://apps.deq.virginia.gov/EDM/
- EPA's How's My Waterway portal (once data is final): https://mywaterway.epa.gov/

2022 IR Public Comment

- Public comment period: July 4 – August 5, 2022
- Download Integrated Report via DEQ website: https://www.deq.virginia.gov/water/water-quality/assessments/integrated-report
- Mapping application: https://apps.deq.virginia.gov/EDM/
- Send comments to:

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